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EXAMINER	
MARTIN, LAURA E	
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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	10/827,030	TORGERSON ET AL.
	Examiner	Art Unit
	Laura E. Martin	2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *4/19/04*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-63* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-63* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/9,8/11,7/22/04*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claim 37 (there are two claims numbered 37) has been renumbered 38.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 8, 9, and 21-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Bhaskar et al. (US 5808640).

As per claim 1, Bhaskar et al. teaches a fluid ejection device comprising: a first fluid feed source (figure 4, element 28) having a first fluid feed source edge in communication with a substrate surface (figure 4, element 24); first firing resistors disposed along the first fluid feed source (figure 4, element 28) and configured to respond to a first current to heat fluid provided by the first fluid feed source (column 1,

lines 63-67); and a reference conductor configured to conduct the first current from the first firing resistors (figure 4, element 51), wherein the reference conductor (figure 5, element 64, 66, 68, 70) is disposed between the first fluid feed source edge (figure 5, element 28) and the first firing resistors (figure 5, element 74).

As per claim 2, Bhaskar et al. teaches a fluid ejection device, wherein the reference conductor is disposed between at least two of the first firing resistors (figure 5, elements 64 and 74).

As per claim 4, Bhaskar et al. teaches a fluid ejection device, comprising firing resistor areas disposed along (figure 5, element 28) the first fluid feed source, wherein the reference conductor (figure 5, elements 64, 66, 68, 70) is disposed between at least two adjacent firing resistor areas (figure 5, element 74).

As per claim 8, Bhaskar et al. teaches a fluid ejection device, wherein the reference conductor is disposed along the entire length of the first fluid feed source (figure 5, elements 64, 66, 68, and 70).

As per claim 9, Bhaskar et al. teaches a fluid ejection device, wherein the reference conductor is disposed along opposing sides of the first feed slot and along the entire length of the opposing sides of the first fluid feed source (figure 5, elements 64, 66, 68,and 70).

As per claim 21, Bhaskar et al. teaches a fluid ejection device, comprising: vaporization chambers fluidically coupled to the first fluid feed source (column 2, lines 25-35); and an isolation layer configured to isolate the reference conductor from fluid

flowing from the fluid feed source to the vaporization chambers, wherein the reference conductor is disposed between the vaporization chambers and the first fluid feed source edge (column 5, lines 5-14; figure 5, elements 72 and 76).

As per claim 22, Bhaskar et al. teaches a fluid ejection device comprising: a first fluid feed source (figure 5, element 28) having a first fluid feed source edge; first vaporization chambers fluidically coupled to the first fluid feed source (column 2, lines 25-35); a reference conductor disposed between the first vaporization chambers and the first fluid feed source edge (figure 5, elements 64, 66, 68, and 70); and an isolation structure (figure 5, element 72) configured to isolate the reference conductor from fluid flowing over the first fluid feed source edge to the first vaporization chambers (figure 5, element 76).

As per claim 23, Bhaskar et al. teaches a fluid ejection device, wherein the reference conductor is disposed between at least two of the first vaporization chambers (figure 5, elements 64, 66, 68, 70, and 76).

As per claim 24, Bhaskar et al. teaches a fluid ejection device, wherein the reference conductor is disposed along opposing sides of the first fluid feed source (figure 5, elements 66 and 70).

Claims 35-55, 62, and 63 are rejected under 35 U.S.C. 102(b) as being anticipated by Cleland et al. (US 6491377).

As per claim 35, Cleland et al. teaches a fluid ejection device comprising: a first fluid feed source (figure 13A, element YELLOW) having a first fluid feed source edge; first firing resistors (figure 13A, elements 1-8) disposed along the first fluid feed source and configured to respond to a first current to heat fluid provided by the first fluid feed source (column 15, line 64-column 16, line 23); first drive switches disposed along the first fluid feed source, wherein each of the first drive switches is electrically coupled to one of the first firing resistors (column 16, line 59-column 17, line 21); and a reference conductor disposed over a portion of the first drive switches and extending to between the first firing resistors and the first fluid feed source edge (figure 11A, element 1111).

As per claim 36, Cleland et al. teaches a fluid ejection device, comprising vaporization chambers (column 1, line 61-column 2, line15) fluidically coupled to the first fluid feed source, wherein each of the first firing resistors (figure 3, element 309, 301)is disposed substantially adjacent to a corresponding one of the vaporization chambers (column 15, line 64 – column 16, line 23) and the reference conductor is disposed between the vaporization chambers and the first fluid feed source edge (figure 11A, elements 1 and 2).

As per claim 37, Cleland et al. teaches a fluid ejection device, wherein the reference conductor is disposed between at least two of the first firing resistors (figure 11A, elements 1 and 2).

As per claim 38, Cleland et al. teaches a fluid ejection device, wherein the reference conductor is disposed between at least two of the first firing resistors and between two of the first drive switches (; figure 10, element R, 1007, 1009).

As per claim 39, Cleland et al. teaches a fluid ejection device, wherein the first firing resistors (figure 13A, elements 9-12) are disposed on opposing sides of the first fluid feed source and the first drive switches are disposed on the opposing sides of the first fluid feed source (figure 13A, element MAGNETA), and the reference conductor is disposed over a portion of the first drive switches (figure 11A, elements 1007) and between the first firing resistors and the first fluid feed source edge along one of the opposing sides of the first fluid feed source and over a portion of the first drive switches and between a second fluid feed source edge along another one of the opposing sides of the first fluid feed source.

As per claim 40, Cleland et al. teaches a fluid ejection device, comprising: a second fluid feed source (figure 13A, element CYAN) having a second fluid feed source edge; second firing resistors (figure 13A, elements 21-24) disposed along the second fluid feed source and configured to respond to the first current to heat fluid provided by the second fluid feed source (column 15, line 64-column 16, line 23); and second drive switches disposed along the second fluid feed source (figure 11A, element 1007), wherein each of the second drive switches is electrically coupled to one of the second firing resistors (figure 11A, R) and the reference conductor is disposed over a portion of the second drive switches and extending to between the second firing resistors and the second fluid feed source edge (figure 10, element 1009).

As per claim 41, Cleland et al. teaches a fluid ejection device, comprising: second firing resistors (figure 13A, elements 13-16) disposed along the first fluid feed source (figure 13A, element MAGENTA) and configured to respond to a second current to heat fluid provided by the first fluid feed source (column 15, line 64-column 16, line 23); and second drive switches disposed along the first fluid feed source (figure 10, element 1007), wherein each of the second drive switches is electrically coupled to one of the second firing resistors (figure 10, R) and the reference conductor (figure 11A, element 1111) is disposed over a portion of the second drive switches and extending to between the second firing resistors and the first fluid feed source edge.

As per claim 42, Cleland et al. teaches a fluid ejection device, comprising: a second fluid feed source having a second fluid feed source edge (figure 13A, element CYAN); second firing resistors (figure 10, element R) disposed along the second fluid feed source (figure 13A, elements 21-24) and configured to respond to a second current to heat fluid provided by the second fluid feed source (column 15, line 64-column 16, line 23); and second drive switches disposed along the second fluid feed source, wherein each of the second drive switches is electrically (figure 10, element 1007) coupled to one of the second firing resistors and the reference conductor is disposed over a portion of the second drive switches and extending to between the second firing resistors and the second fluid feed source edge (figure 11A, element 1111).

As per claim 43, Cleland et al. teaches a fluid ejection method, comprising: receiving fluid from a first fluid feed source (figure 13A, element MAGNETA) having a first fluid feed source edge in communication with a substrate surface; receiving a first

current at first firing resistors disposed along the first fluid feed source (figure 13A, element 9, figure 10, element R); heating the fluid received from the first fluid feed source in response to the received first current at the first firing resistors (column 1, line 61-column 2, line 5); receiving the first current from the first firing resistors on a reference conductor; and conducting a first part of the first current on the reference conductor disposed between the first fluid feed source edge and the first firing resistors (column 16, line 59-column 17, line 21).

As per claim 44, Cleland et al. teaches a fluid ejection method, comprising: first firing resistor areas (figure 13A, elements 9-12); and conducting a second part of the first current on the reference conductor disposed between the first firing resistor areas (Figure 11A, element 1111).

As per claim 45, Cleland et al. teaches a fluid ejection method, comprising: gating the first current through drive switches (column 15, line 64-column 16, line 23); and conducting a second part of the first current on the reference conductor over a portion of the drive switches (column 25, line 37-column 26, line 36).

As per claim 46, Cleland et al. teaches a fluid ejection method, comprising conducting a second part of the first current on the reference conductor (figure 11A, element 1111) along the entire length of the first fluid feed source (figure 11A, element 1101).

As per claim 47, Cleland et al. teaches a fluid ejection method, comprising receiving the first current from the first firing resistors (figure 13A, 9-12) on opposing sides of the first fluid feed source (figure 13A, element MAGENTA).

As per claim 48, Cleland et al. teaches a fluid ejection method, comprising: receiving a second current at second firing resistors disposed along the first fluid feed source (figure 13A, elements CYAN, 17-20); heating the fluid received from the first fluid feed source in response to the received second current at the second firing resistors (column 1, line 61-column 2, line 5); receiving the second current from the second firing resistors on the reference conductor; and conducting part of the second current on the reference conductor disposed between the first fluid feed source edge and the second firing resistors (column 16, line 59-column 7, line 21).

As per claim 49, Cleland et al. teaches a fluid ejection method, comprising: receiving fluid from a second fluid feed source having a second fluid feed source edge (figure 13A, elements CYAN and 17-20)in communication with the substrate surface (figure 13A, element 1300); receiving the first current at second firing resistors disposed along the second fluid feed source; heating the fluid received from the second fluid feed source in response to the received first current at the second firing resistors (column 1, line 61-column 2, line 5); and conducting a second part of the first current on the reference conductor disposed between the second fluid feed source edge and the second firing resistors (column 16, line 59-column 17, line 21).

As per claim 50, Cleland et al. teaches a fluid ejection method, comprising: receiving fluid from a second fluid feed source (figure 13A, element CYAN and 17-20) having a second fluid feed source edge in communication with the substrate surface (figure 13A, element 1300); receiving a second current at second firing resistors disposed along the second fluid feed source (column 15, line 64-column 16, line 23); heating the fluid received from the second fluid feed source in response to the received second current at the second firing resistors; receiving the second current from the second firing resistors on the reference conductor (column 1, line 61-column 2, line 5); and conducting part of the second current on the reference conductor between the second fluid feed source edge and the second firing resistors (column 16, line 59-column 17, line 21).

As per claim 51, Cleland et al. teaches a fluid ejection method, comprising: supplying fluid from a fluid feed source over a fluid feed source edge and a reference conductor to vaporization chambers; and receiving the fluid in the vaporization chambers (column 26, line 60-column 27, line 2).

As per claim 52, Cleland et al. teaches a fluid ejection device comprising: a fluid feed source (figure 23, element 1205); firing resistors disposed along the fluid feed source (figure 13A, elements 9-16) and configured to respond to a current to heat fluid provided by the fluid feed source; and a reference conductor configured to conduct the current from the firing resistors, wherein the reference conductor is disposed between two of the firing resistors (column 15, line 64-column 16, line 23).

As per claim 53, Cleland et al. teaches a fluid ejection device, comprising firing resistor areas (figure 13A, elements 9-16) disposed along the fluid feed source (figure 13A, element MAGENTA), wherein the reference conductor is disposed between adjacent firing resistor areas (figure 11A, element 1111).

As per claim 54, Cleland et al. teaches a fluid ejection device comprising: a first fluid feed source (figure 13A, MAGENTA); first firing resistors (figure 13A, elements 9-16) disposed along the first fluid feed source and configured to respond to a first current to heat fluid provided by the first fluid feed source (column 15, line 64-column 16, line 23); first drive switches (figure 10, element 1007)disposed along the first fluid feed source on a first side of the first firing resistors, wherein each of the first drive switches is electrically coupled to one of the first firing resistors (figure 10, element R); and a reference conductor disposed along the first feed source on a second side of the first firing resistors (figure 11A, element 1111).

As per claim 55, Cleland et al. teaches a fluid ejection device, wherein the reference conductor is disposed on the first side of the resistors (figure 11A, element 1111).

As per claim 62, Cleland et al. teaches a fluid ejection device comprising: means for receiving fluid from a first fluid feed source (figure 13A, element MAGENTA); means for receiving fluid from a second fluid feed source (figure 13A, element CYAN); means for receiving a first energy signal comprising energy pulses; means for responding to the first energy signal to eject fluid received from the first fluid feed source; means for

responding to the first energy signal to eject fluid received from the second fluid feed source, wherein the means for receiving the first energy signal is electrically coupled to the means for responding to the first energy signal to eject fluid received from the first fluid feed source and the means for responding to the first energy signal to eject fluid received from the second fluid feed source (column 16, line 59-column 17, line 21).

As per claim 63, Cleland et al. teaches a method of operating a fluid ejection device comprising: receiving fluid from a first fluid feed source (figure 13A, element MAGENTA) in first drop generators (figure 3); receiving fluid from a second fluid feed source (figure 13A, element CYAN) in second drop generators (figure 3); receiving a first energy signal comprising energy pulses in a first fire line; and responding to the first energy signal to eject fluid from the first drop generators and the second drop generators (column 1, line 60-column 2, line 5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3, 5-7, 10-19, and 25-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhaskar et al. (US 5808640) in view of Cleland et al. (US 6491377).

Bhaskar et al. teaches a fluid ejection device.

As per claims 10-19, Bhaskar et al. teaches the reference conductor (figure 2, element 22) being configured to conduct current (column 1, lines 63-65) to a resistor (figure 2, element 20), wherein the reference conductor is disposed between the first fluid feed source edge (figure 2, element 28) and the firing resistors (figure 2, element 20).

As per claims 25 and 29, Bhaskar et al. teaches a reference conductor (figure 2, element 22) disposed between a fluid vaporization chambers (figure 2, element 18) and the first fluid feed source (figure 1, element 28).

As per claim 26, Bhaskar et al. teaches and the reference conductor is isolated from fluid flowing through the fluid paths by the isolation structure (column 5, lines 5-14)

As per claim 27, Bhaskar et al. teaches the second vaporization chambers and the second fluid feed source edge and the isolation structure is configured to isolate the reference conductor from fluid flowing over the second fluid feed source edge to the second vaporization chambers (column 5, lines 5-14).

As per claim 28, Bhaskar et al. teaches the reference conductor is (figure 5, element 64, 66, 68, 70) disposed between at least two of the second vaporization chambers (figure 5, element 74).

As per claim 33, the reference conductor is disposed between two of the firing resistors (figure 5, elements 74, 64, 66, 68, 70).

Bhaskar et al. does not disclose:

As per claim 3, drive switches, wherein each of the drive switches is electrically coupled to a corresponding first firing resistor of the first firing resistors and the reference conductor is disposed over a portion of the drive switches.

As per claim 5, drive switches formed in a first layer and firing resistor areas formed in a second layer disposed along the first fluid feed source, wherein the reference conductor is disposed between adjacent firing resistor areas and over a portion of the drive switches.

As per claim 6, drive switches, wherein each of the drive switches is electrically connected to a corresponding first firing resistor of the first firing resistors and the reference conductor.

As per claim 7, drive switches, wherein each of the drive switches is a field effect transistor that is electrically connected between a corresponding first firing resistor and the reference conductor.

As per claim 10, the first firing resistors are disposed along opposing sides of the first fluid feed source.

As per claim 11, second firing resistors disposed along the first fluid feed source and configured to respond to a second current to heat fluid provided by the first fluid feed source.

As per claim 12 the second firing resistors are disposed on opposing sides of the first fluid feed source.

As per claim 13, a second fluid feed source and third firing resistors disposed along the second fluid feed source and configured to respond to a third current to heat fluid provided by the second fluid feed source.

As per claim 14, the third firing resistors are disposed on opposing sides of the second fluid feed source and a third fluid feed source edge along another one of the opposing sides of the second fluid feed source.

As per claim 15, fourth firing resistors disposed along the second fluid feed source and configured to respond to a fourth current to heat fluid provided by the second fluid feed source.

As per claim 16, the fourth firing resistors are disposed on opposing sides of the second fluid feed source.

As per claim 17, fifth firing resistors, wherein a first portion of the fifth firing resistors are disposed along the first fluid feed source and configured to respond to a fifth current to heat fluid provided by the first fluid feed source and a second portion of the fifth firing resistors are disposed along the second fluid feed source and configured to respond to the fifth current to heat fluid provided by the second fluid feed source.

As per claim 18, sixth firing resistors, wherein a first portion of the sixth firing resistors are disposed along the first fluid feed source and configured to respond to a sixth current to heat fluid provided by the first fluid feed source and a second portion of the sixth firing resistors are disposed along the second fluid feed source and configured to respond to the sixth current to heat fluid provided by the second fluid feed source.

As per claim 19, a second fluid feed source having a second fluid feed source edge in communication with the substrate surface and second firing resistors, wherein a first portion of the second firing resistors are disposed along the first fluid feed source and configured to respond to a second current to heat fluid provided by the first fluid feed source and a second portion of the second firing resistors are disposed along the second fluid feed source and configured to respond to the second current to heat fluid provided by the second fluid feed source.

As per claim 25, the first vaporization chambers are disposed along opposing sides of the first fluid feed source and the reference conductor is disposed between the first vaporization chambers and the first fluid feed source edge along one of the opposing sides of the first fluid feed source and the first vaporization chambers and a second fluid feed source edge along another one of the opposing sides of the first fluid feed source.

As per claim 26, fluid paths, wherein each of the fluid paths is fluidically coupled to the first fluid feed source and a corresponding one of the first vaporization chambers and the reference conductor is isolated from fluid flowing through the fluid paths by the isolation structure.

As per claim 27, a second fluid feed source having a second fluid feed source edge; and second vaporization chambers fluidically coupled to the second fluid feed source.

As per claim 28, the reference conductor is disposed between at least two of the second vaporization chambers.

As per claim 29, the second vaporization chambers are disposed along opposing sides of the second fluid feed source and the reference conductor.

As per claim 30, firing resistors, wherein each of the firing resistors is disposed in a corresponding one of the first vaporization chambers and configured to respond to a current to heat fluid provided by the first fluid feed source and the reference conductor is configured to conduct the current from the firing resistors.

As per claim 31, drive switches, wherein each of the drive switches is electrically coupled between a corresponding one of the firing resistors and the reference conductor.

As per claim 32, the reference conductor is disposed over a portion of the drive switches.

As per claim 33, the reference conductor is disposed between two of the firing resistors.

As per claim 34, the reference conductor is disposed between two of the firing resistors and over a portion of the drive switches.

Cleland et al. teaches:

As per claim 3, drive switches, wherein each of the drive switches is electrically coupled to a corresponding first firing resistor of the first firing resistors and the reference conductor is disposed over a portion of the drive switches (column 16, line 59-column 17, line 21).

As per claim 5, drive switches formed in a first layer and firing resistor areas formed in a second layer disposed along the first fluid feed source (column 16, line 60-column 17, line 21), wherein the reference conductor (figure 11A, element 1009) is disposed between adjacent firing resistor (figure 11A, element R) areas and over a portion of the drive switches (figure 11A, element 1007).

As per claim 6, drive switches, wherein each of the drive switches is electrically connected to a corresponding first firing resistor (figure 10, element R) of the first firing resistors and the reference conductor (figure 10, element 1009).

As per claim 7, drive switches, wherein each of the drive switches (figure 10, element 1007) is a field effect transistor (figure 17, lines 1-3) that is electrically connected between a corresponding first firing resistor (figure 13A, element R) and the reference conductor (figure 13A, element 1009).

As per claim 10, the first firing resistors are disposed along opposing sides of the first fluid feed source (figure 13A, element 9-10 MAGENTA) and the reference conductor (figure 11C, element 1111) is disposed between the first firing resistors and the first fluid feed source edge along one of the opposing sides of the first fluid feed

source and the first firing resistors and a second fluid feed source edge along another one of the opposing sides of the first fluid feed source.

As per claim 11, second firing resistors disposed along the first fluid feed source and configured to respond to a second current to heat fluid (column 15, line 64-column 16, line 23) provided by the first fluid feed source (figure 13A, elements 13-14, MAGENTA).

As per claim 12 the second firing resistors are disposed on opposing sides (figure 13A, element 13-14) of the first fluid feed source.

As per claim 13, a second fluid feed source and third firing resistors disposed along the second fluid feed source (figure 13A, element CYAN 17-20) and configured to respond to a third current to heat fluid (column 15, line 64-column 16, line 23) provided by the second fluid feed source.

As per claim 14, the third firing resistors are disposed on opposing sides of the second fluid feed source (figure 13A, element CYAN 17-20).

As per claim 15, fourth firing resistors disposed along the second fluid feed source (figure 13A, element 21-24 CYAN) and configured to respond to a fourth current to heat fluid provided by the second fluid feed source (column 15, line 64-column 16, line 23.

As per claim 16, the fourth firing resistors are disposed on opposing sides of the second fluid feed source (figure 13A, element CYAN).

As per claim 17, fifth firing resistors, wherein a first portion of the fifth firing resistors are disposed along the first fluid feed source (figure 13A, MAGENTA 15 and

16) and configured to respond to a fifth current to heat fluid provided by the first fluid feed source (column 15, line 64-column 16, line 23) and a second portion of the fifth firing resistors are disposed along the second fluid feed source and configured to respond to the fifth current to heat fluid provided by the second fluid feed source (column 15, line 64-column 16, line 23).

As per claim 18, sixth firing resistors, wherein a first portion of the sixth firing resistors are disposed along the first fluid feed source (figure 13A, element MAGENTA 9-10)and configured to respond to a sixth current to heat fluid provided by the first fluid feed source (column 15, line 64-column 16, line 23) and a second portion of the sixth firing resistors are disposed along the second fluid feed source and configured to respond to the sixth current to heat fluid provided by the second fluid feed source (column 15, line 64-column 16, line 23).

As per claim 19, a second fluid feed source having a second fluid feed source edge (figure 13A, element CYAN) in communication with the substrate surface (figure 13A, 1300) and second firing resistors (figure 13A, element 13-16), wherein a first portion of the second firing resistors are disposed along the first fluid feed source and configured to respond to a second current to heat fluid provided by the first fluid feed source and a second portion of the second firing resistors are disposed along the second fluid feed source and configured to respond to the second current to heat fluid provided by the second fluid feed source (column 15, line 64-column 16, line 23.

As per claim 25, the first vaporization chambers (column 1, line 61-column 2, line 5) are disposed along opposing sides of the first fluid feed source (figure 13A, CYAN, 9-

12) and the reference conductor (figure 11A, element 1111) is disposed between the first vaporization chambers and the first fluid feed source edge along one of the opposing sides of the first fluid feed source and the first vaporization chambers and a second fluid feed source edge along another one of the opposing sides of the first fluid feed source.

As per claim 26, fluid paths, wherein each of the fluid paths is fluidically coupled to the first fluid feed source and a corresponding one of the first vaporization chambers (column 12, lines 54-62)

As per claim 27, a second fluid feed source having a second fluid feed source edge; and second vaporization chambers fluidically coupled to the second fluid feed source (figure 13A, element MAGENTA, 9-16)

As per claim 29, the second vaporization chambers are disposed along opposing sides of the second fluid feed source (figure 13A, elements MAGENTA 17-20) and the reference conductor (figure 11A, element 1111).

As per claim 30, firing resistors, wherein each of the firing resistors is disposed in a corresponding one of the first vaporization chambers (column 1, line 61-column 2, line 5) and configured to respond to a current to heat fluid provided by the first fluid feed source and the reference conductor is configured to conduct the current from the firing resistors (column 15, line 64-column 16, line 23).

As per claim 31, drive switches, wherein each of the drive switches (figure 10, element 1007) is electrically coupled between a corresponding one of the firing resistors (figure 10, element R) and the reference conductor (figure 10, element 1009).

As per claim 32, the reference conductor is disposed over a portion of the drive switches (column 16, line 59-column 7, line 21).

As per claim 34, the reference conductor (figure 11A, element 1111; figure 10, element 1009) is disposed between two of the firing (figure 11A, elements 1 and 2) resistors and over a portion of the drive switches (figure 10, element 1007).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the fluid ejection device of Bhaskar et al. with the disclosure of Cleland et al. in order to create a higher quality printer.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bhaskar et al. (US 5808640) in view of Chen et al. (US 20020135640).

Bhaskar et al. teaches a fluid ejection device; however, it does not disclose a conductor comprising a conductive layer and a resistive layer.

Chen et al. teaches a conductor comprising a conductive layer and a resistive layer [0024].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the fluid ejection device of Bhaskar et al. with the disclosure of Chen et al. in order to create a higher quality printer.

Claims 58-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cleland et al. (US 6491377) in view of Axtell et al. (US 20020093551).

As per claim 58, Cleland et al. teaches a first fluid feed source (figure 13A, element MAGENTA); a second fluid feed source (figure 13A, element CYAN); first drop generators fluidically coupled to a first fluid feed source and second drop generators fluidically coupled to a second fluid feed source.

As per claim 59, Cleland et al. teaches a first fluid fee source (figure 13A, element MAGENTA); a second fluid feed source (figure 13A, element CYAN); first drop generators fluidically coupled to a first fluid feed source; second drop generators fluidically coupled to a second fluid feed source; and third drop generators fluidically coupled to the first fluid feed source (figure 3; column 18, lines 57-66).

As per claim 60, Cleland et al. teaches a first fluid feed source (figure 13A, element MAGENTA); first drop generators fluidically coupled to the first fluid feed source (column 18, lines 57-66).

As per claim 61, Cleland et al. teaches a first fluid feed source (figure 13A, element MAGENTA); a second fluid feed source (figure 13A, element CYAN); first drop generators fluidically coupled to the first fluid feed source disposed between the first fluid feed source and the second fluid feed source; second drop generators fluidically coupled to the first fluid feed source and disposed between the first fluid feed source and the second fluid feed source (column 18, lines 57-66).

Cleland et al. does not teach:

As per claim 58, a first fire line adapted to receive a first energy signal comprising energy pulses; and wherein the first and second drop generators are electrically coupled to the first fire line and configured to respond to the first energy signal to eject fluid.

As per claim 59, a first fire line adapted to receive a first energy signal comprising energy pulses; a second fire line adapted to receive a second energy signal comprising energy pulses; a first and second drop generator configured to respond to the first energy signal to eject fluid and each of the third drop generators are configured to respond to the second energy signal to eject fluid.

As per claim 60, a first fire line adapted to receive a first energy signal comprising energy pulses wherein the first drop generators are configured to the first drop generators are configured to respond to the first energy signal to eject fluid and the first fire line comprises a layered portion comprising a first conductive layer and conductive layer electrically to the first conductive layer.

As per claim 61, a first fire line adapted to receive a first energy signal; a second fire line adapted to receive a first energy signal comprising energy pulses, wherein each of the first drop generators are electrically coupled to the first fire line and each of the second drop generators are electrically coupled the second fire line, and the firs tire line is disposed adjacent the second fire line and bypasses the second drop generators between the first fluid feed source and second fluid feed source.

Axtell et al. teaches:

As per claim 58, a first fire line adapted to receive a first energy signal comprising energy pulses [054-0055]; and wherein the first and second drop generators are electrically coupled to the first fire line and configured to respond to the first energy signal to eject fluid [0036].

As per claim 59, a first fire line adapted to receive a first energy signal comprising energy pulses; a second fire line adapted to receive a second energy signal comprising energy pulses [0054-0055]; a first and second drop generator configured to respond to the first energy signal to eject fluid and each of the third drop generators are configured to respond to the second energy signal to eject fluid [0036].

As per claim 60, a first fire line adapted to receive a first energy signal comprising energy pulses wherein the first drop generators are configured to the first drop generators are configured to respond to the first energy signal to eject fluid and the first fire line comprises a layered portion comprising a first conductive layer and conductive layer electrically to the first conductive layer [0054-0055].

As per claim 61, a first fire line adapted to receive a first energy signal; a second fire line adapted to receive a first energy signal comprising energy pulses, wherein each of the first drop generators are electrically coupled to the first fire line and each of the second drop generators are electrically coupled the second fire line [0054-0055], and the first fire line is disposed adjacent the second fire line and bypasses the second drop generators between the first fluid feed source and second fluid feed source [0036].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the fluid ejection devices and methods of Cleland et al. with the disclosure of Axtell et al. to create a higher quality printer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Martin whose telephone number is (571) 272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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